# The Evening Sky Map

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

WWW.SKYMAPS.COM

## NORTHERN HEMISPHERE
## JANUARY 2013

## Sky Calendar – January 2013

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1 **Moon near Regulus** (131° from Sun, morning sky) at 19h UT.

2 **Earth at Perihelion** (closest to Sun) at 5h UT. The Sun-Earth distance is 0.983290 a.u. or 147.1 million kilometers.

3 **Quadrantid Meteor Shower** peaks at 13h UT. Active between December 28 and January 12. Produces up to 120 meteors per hour. Radiant is in northern Boötes. Strong moonlight makes for unfavorable viewing conditions this year.

5 **Last Quarter Moon** at 3:58 UT.

5 **Moon very near Spica** (81° from Sun, morning sky) at 21h UT. Occultation visible in Australia, New Zealand, and parts of Antarctica.

7 **Moon near Saturn** (67° from Sun, morning sky) at 0h UT. Mag. +0.6.

9 **Moon near Antares** (39° from Sun, morning sky) at 0h UT.

10 **Moon at perigee** (closest to Earth) at 10h UT (360,048 km; 33.2').

10 **Moon near Venus** (19° from Sun, morning sky) at 11h UT. Mag. –3.9.

11 **New Moon** at 19:44 UT. Start of lunation 1114.

13 **Moon near Mars** (21° from Sun, evening sky) at 7h UT. Mag. +1.2.

18 **Mercury at superior conjunction** with the Sun at 9h UT. The planet passes into the evening sky.

18 **First Quarter Moon** at 23:45 UT.

21 **Moon near the Pleiades** (evening sky) at 14h UT.

22 **Moon very near Jupiter** (evening sky) at 2h UT. Occultation visible in South Pacific and central South America. From the Americas Jupiter will appear very close to the Moon on the evening of January 21. Mag. –2.6.

22 **Moon at apogee** (farthest from Earth) at 11h UT (distance 405,311 km; angular size 29.5').

22 **Moon near Aldebaran** (evening sky) at 11h UT.

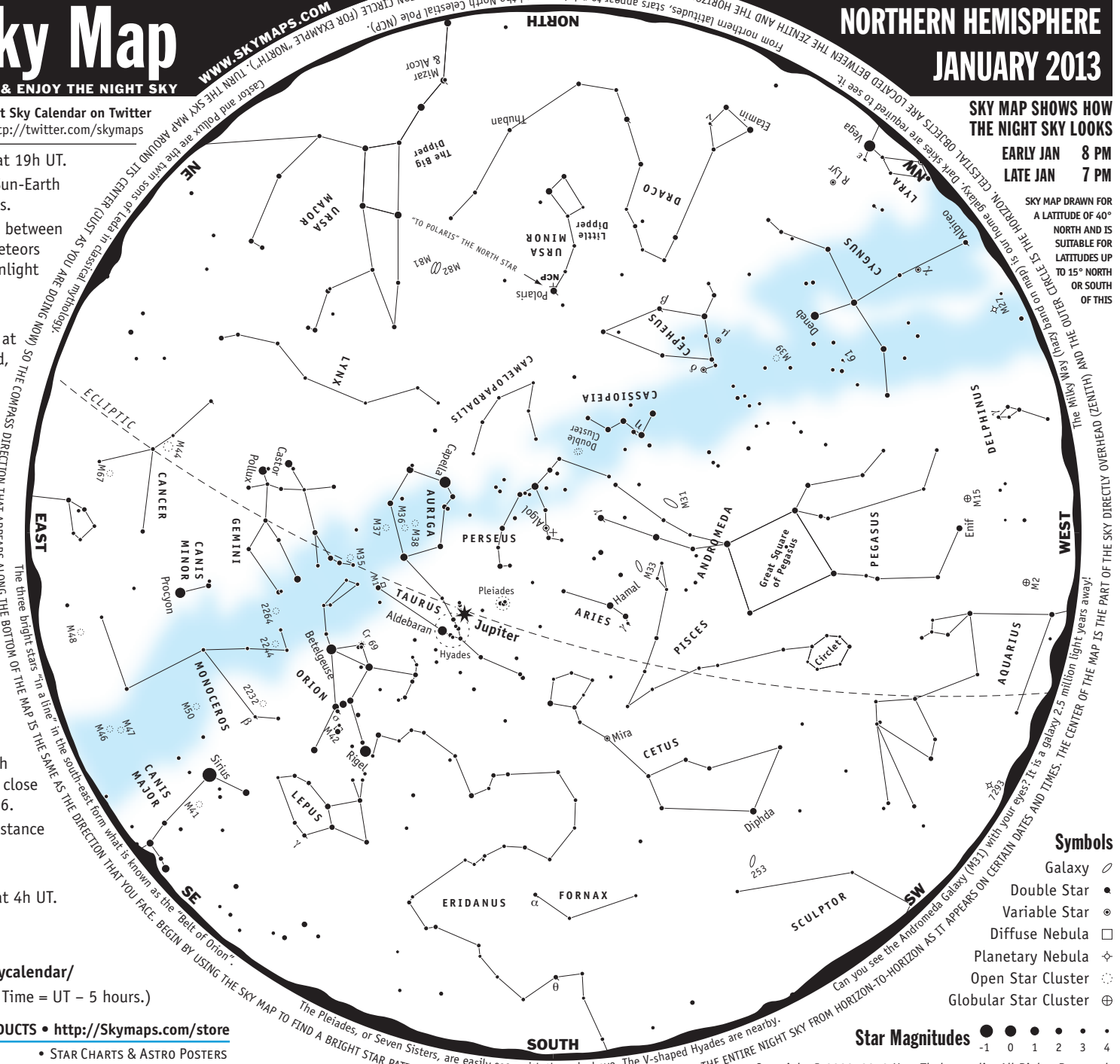
27 **Moon near Beehive cluster (M44)** (midnight sky) at 4h UT.

27 **Full Moon** at 4:39 UT.

29 **Moon near Regulus** (morning sky) at 0h UT.

**More sky events and links at http://Skymaps.com/skycalendar/**

All times in Universal Time (UT). (USA Eastern Standard Time = UT – 5 hours.)




## SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY JAN 8 PM
LATE JAN 7 PM

SKY MAP DRAWN FOR A LATITUDE OF 40° NORTH AND IS SUITABLE FOR LATITUDES UP TO 15° NORTH OR SOUTH OF THIS

### Symbols

- Galaxy
- Double Star
- Variable Star
- Diffuse Nebula
- Planetary Nebula
- Open Star Cluster
- Globular Star Cluster

**Star Magnitudes** -1 0 1 2 3 4

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**INSTRUCTIONS:** THE SKY MAP SHOWS THE ENTIRE NIGHT SKY FROM HORIZON-TO-HORIZON AS IT APPEARS ON CERTAIN DATES AND TIMES. THE CENTER OF THE MAP IS THE PART OF THE SKY DIRECTLY OVERHEAD (ZENITH).

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## About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

## Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

## Astronomical Glossary

**Conjunction** – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

**Constellation** – A defined area of the sky containing a star pattern.

**Diffuse Nebula** – A cloud of gas illuminated by nearby stars.

**Double Star** – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

**Ecliptic** – The path of the Sun's center on the celestial sphere as seen from Earth.

**Elongation** – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

**Galaxy** – A mass of up to several billion stars held together by gravity.

**Globular Star Cluster** – A ball-shaped group of several thousand old stars.

**Light Year (ly)** – The distance a beam of light travels at 300,000 km/sec in one year.

**Magnitude** – The brightness of a celestial object as it appears in the sky.

**Open Star Cluster** – A group of tens or hundreds of relatively young stars.

**Opposition** – When a celestial body is opposite the Sun in the sky.

**Planetary Nebula** – The remnants of a shell of gas blown off by a star.

**Universal Time (UT)** – A time system used by astronomers. Also known as Greenwich Mean Time. USA Eastern Standard Time (for example, New York) is 5 hours behind UT.

**Variable Star** – A star that changes brightness over a period of time.

# CELESTIAL OBJECTS

NORTHERN HEMISPHERE

JANUARY 2013

Skymaps.com

## Easily Seen with the Naked Eye

| | | | |
|---|---|---|---|
| Capella | Aur | ● | The 6th brightest star. Appears yellowish in color. Spectroscopic binary. Dist=42 ly. |
| Sirius | CMa | ● | The brightest star in the sky. Also known as the "Dog Star". Dist=8.6 ly. |
| Procyon | CMi | ● | Greek name meaning "before the dog" - rises before Sirius (northern latitudes). Dist=11.4 ly. |
| δ Cephei | Cep | ◉ | Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion. |
| Deneb | Cyg | ● | Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400 ±200 ly. |
| Castor | Gem | ◍ | Multiple star system with 6 components. 3 stars visible in telescope. Dist=52 ly. |
| Pollux | Gem | ● | With Castor, the twin sons of Leda in classical mythology. Dist=34 ly. |
| Vega | Lyr | ● | The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly. |
| Rigel | Ori | ● | The brightest star in Orion. Blue supergiant star with mag 7 companion. Dist=770 ly. |
| Betelgeuse | Ori | ● | One of the largest red supergiant stars known. Diameter=300 times that of Sun. Dist=430 ly. |
| Algol | Per | ◉ | Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days. |
| Pleiades | Tau | ⁘ | The Seven Sisters. Spectacular cluster. Many more stars visible in binoculars. Dist=399 ly. |
| Hyades | Tau | ⁘ | Large V-shaped star cluster. Binoculars reveal many more stars. Dist=152 ly. |
| Aldebaran | Tau | ● | Brightest star in Taurus. It is not associated with the Hyades star cluster. Dist=66.7 ly. |
| Polaris | UMi | ◍ | The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly. |

## Easily Seen with Binoculars

| | | | |
|---|---|---|---|
| M31 | And | ⬭ | The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly. |
| M2 | Aqr | ⊕ | Resembles a fuzzy star in binoculars. |
| M38 | Aur | ⁘ | Stars appear arranged in "pi" or cross shape. Dist=4,300 ly. |
| M36 | Aur | ⁘ | About half size of M38. Located in rich Milky Way star field. Dist=4,100 ly. |
| M37 | Aur | ⁘ | Very fine star cluster. Discovered by Messier in 1764. Dist=4,400 ly. |
| M44 | Cnc | ⁘ | Praesepe or Beehive Cluster. Visible to the naked eye. Dist=590 ±20 ly. |
| M41 | CMa | ⁘ | First recorded observation by Aristotle in 325 BC as "cloudy spot". Dist=2,300 ly. |
| μ Cephei | Cep | ◉ | Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days. |
| Mira | Cet | ◉ | Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days. |
| χ Cygni | Cyg | ◉ | Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days. |
| M39 | Cyg | ⁘ | May be visible to the naked eye under good conditions. Dist=900 ly. |
| ν Draconis | Dra | ◍ | Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly. |
| M35 | Gem | ⁘ | Fine open cluster located near foot of the twin Castor. Dist=2,800 ly. |
| γ Leporis | Lep | ◍ | Visible with binoculars. Gold & white stars. Mags 3.6 & 6.2. Dist=30 ly. Sep=96.3". |
| R Lyrae | Lyr | ◉ | Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days. |
| 2232 | Mon | ⁘ | A large scattered star cluster of 20 stars. Dist=1,300 ly. |
| 2244 | Mon | ⁘ | Surrounded by the rather faint Rosette Nebula. Dist=5,540 ly. |
| M50 | Mon | ⁘ | Visible with binoculars. Telescope reveals individual stars. Dist=3,000 ly. |
| Cr 69 | Ori | ⁘ | Lambda Orionis Cluster. Dist=1,630 ly. |
| M42 | Ori | □ | The Great Orion Nebula. Spectacular bright nebula. Best in telescope. Dist=1,300 light years. |
| M15 | Peg | ⊕ | Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly. |
| Double Cluster | Per | ⁘ | Double Cluster in Perseus. NGC 869 & 884. Excellent in binoculars. Dist=7,300 ly. |
| 253 | Scl | ⬭ | Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group. |
| Mizar & Alcor | UMa | ◍ | Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion. |

## Telescopic Objects

| | | | |
|---|---|---|---|
| γ Andromedae | And | ◍ | Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8". |
| γ Arietis | Ari | ◍ | Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8". |
| M67 | Cnc | ⁘ | Contains 500+ stars mag 10 & fainter. One of the oldest clusters. Dist=2,350 ly. |
| η Cassiopeiae | Cas | ◍ | Yellow star mag 3.4 & orange star mag 7.5. Dist=19 ly. Orbit=480 years. Sep=12". |
| 61 Cygni | Cyg | ◍ | Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4". |
| γ Delphini | Del | ◍ | Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field. |
| θ Eridani | Eri | ◍ | Striking blue-white double star. Mags 3.2 & 4.3. Visible in a small telescope. Sep=8.2". |
| β Monocerotis | Mon | ◍ | Triple star. Mags 4.6, 5.0 & 5.4. Requires telescope to view arc-shape. Sep=7.3". |
| 2264 | Mon | ⁘ | Christmas Tree Cluster. Associated with the Cone Nebula. Dist=2,450 ly. |
| σ Orionis | Ori | ◍ | Superb multiple star. 2 mag 7 stars one side, mag 9 star on other. Struve 761 triple in field. |
| M1 | Tau | □ | Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly. |
| M33 | Tri | ⬭ | Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million ly. |
| M81 | UMa | ⬭ | Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope. |
| M82 | UMa | ⬭ | Close to M81 but much fainter and smaller. |

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